

## REMARKS

### 35 U.S.C. § 112

Claims 21-23 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed. For example, in the first set of experiments, a reacting foam was poured onto a heated probe to collect real-time FTIR data on the reacting foam. Specification, page 7, lines 14-18. The heated probe was started at room temperature (e.g. 20°C) and ramped up at a constant rate of 180 °C during a time interval of 900 seconds. *Id.* at lines 18-19. So the difference between the starting temperature and the ending temperature is 160°C (e.g. 180 °C-20 °C). Thus, the heat was increased 160 °C over 900 sec to give a temperature increase of 0.178 °C/min (e.g. 160 °C/900 sec). Referring to Figure 1 of Applicants specification, the trimerization of isocyanates promoted by 2(2-Dimethylaminoethyl)methylamino-ethanol (Z-110) begins at about 680 seconds. The temperature at this time is about 141 °C. For example,  $680 \text{ seconds} \times 0.178 \text{ }^{\circ}\text{C/sec} = 121 \text{ }^{\circ}\text{C}$  for the start of the trimer reaction.  $121 \text{ }^{\circ}\text{C} + 20 \text{ }^{\circ}\text{C}$  (start of the temperature profile) = $141 \text{ }^{\circ}\text{C}$ . Thus, according to Figure 1 Z-110 is the only *tertiary amine* catalyst tested that promotes trimerization of isocyanates at an elevated temperature. This explanation also supports the amendments to the independent claims made in this document.

### 35 U.S.C. § 103

Claims 1-17 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,710,521 issued to Soukup ("Soukup") in view of U.S. Patent No. 5,238,894 issued to Savoca ("Savoca"). It is respectfully submitted that the Examiner has not established *prima facie* obviousness.

In the Office action, the Examiner admits that Soukup is silent with respect to the claimed specific amine component, and the Examiner has not shown that the claimed specific amine component is taught by Savoca. Instead, citing MPEP §2144.08, paragraph II.A.4.(c), the Examiner reasons that Savoca teaches a tertiary amine that is *similar* to the claimed amine and that when chemical compounds have a very close structural similarities *and similar utilities* that a *prima facie* case of obviousness may be made.

To establish a *prima facie* case of obviousness under this section of the MPEP, one must:

- (A)determine the scope and contents of the prior art;
- (B)ascertain the differences between the prior art and the claims in issue;
- (C)determine the level of >ordinary< skill in the pertinent art; **and**
- (D)evaluate any evidence of secondary considerations.

MPEP §2144.08, paragraph II.A (emphasis added). Thus, an examiner must do all four of A-D to successfully establish *prima facie* obviousness. But the Examiner has not done this, at a minimum he has not ascertained the differences between the prior art and the claims in issue per (B), above. For instance, to do this, the Examiner should have made findings related to the structural similarities between the disclosed species or subgenus of Savoca and the claimed amine component:

## **2. Ascertain the Differences Between the Closest Disclosed Prior Art Species or Subgenus of Record and the Claimed Species or Subgenus**

Once the structure of the disclosed prior art genus and that of any expressly described species or subgenus within the genus are identified, Office personnel should compare it to the claimed species or subgenus to determine the differences. Through this comparison, the closest disclosed species or subgenus in the prior art reference should be identified and compared to that claimed. *Office personnel should make explicit findings on the similarities and differences between the closest disclosed prior art species or subgenus of record and the claimed species or subgenus including findings relating to similarity of structure, chemical properties and utilities.*

MPEP §2144.08 II.A.2 (emphasis added). The Examiner merely points to an entire column of the Savoca reference asserting that a tertiary amine taught in that column is similar to that of the claimed amine. Merely being a tertiary amine does not in and of itself establish *prima facie* obviousness; “[t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish *prima facie* obviousness.” See MPEP §2144.08 II. Because the Examiner has merely identified a genus without providing any findings as to how the closest disclosed species or subgenus and the claimed amine component are structurally similar, it is respectfully submitted that the Examiner has not established *prima facie* obviousness.

Additionally, neither prior art reference, alone or in combination, discloses or suggests that the listed tertiary amines are capable of catalyzing a trimer reaction to form isocyanurate. For example, the tertiary amines taught by Soukup merely catalyze the “the reaction between an isocyanato group and an active hydrogen atom” and that such “catalysts

are a group of compounds well recognized in the art of synthesizing polyurethanes.” Soukup, column 3, lines 18-28. Thus, Soukup does not teach that his catalysts catalyze a trimer reaction, much less do so at a particular temperature. What Soukup does teach is that his observed improvement in trimerization is due to the replacement of a high molecular weight carboxylate salt with a low molecular weight carboxylate salt. Soukup, column 2, line 65-column 3, line 5. Thus, there is nothing in Soukup to indicate that the disclosed tertiary amines do anything more than catalyze the reaction of polyisocyanate and polyester polyol. Soukup, column 5, lines 20-40 and 6, lines 9-16.

Savoca does not cure the deficiency of Soukup. Like Soukup, Savoca uses a tertiary amine that is a “urethane catalyst.” Column 4, line 67-69. A boron compound is added to the tertiary amine to form an adduct of a tertiary amine urethane catalyst. See column 4, lines 43-58. Savoca’s catalyst composition can catalyze the reaction between an isocyanate and an active hydrogen-containing compound such as an alcohol, amine, or water or the trimerization of isocyanate. Column 3, lines 21-30. Without being bound by theory, it is believed that the anion of Savoca’s adduct is what catalyzes the trimer reaction. Nevertheless, Savoca does not disclose that these tertiary amines alone, (e.g. not an adduct) catalyze the trimer reaction. This is supported, at least in part by the data provided in the Applicant’s specification. For example, referring to FIG. 1 of the Applicant’s disclosure, several tertiary amine catalysts were compared to known trimer catalysts for their ability to catalyze the trimer reaction. Of the eight tertiary amines tested, only the JEFFCAT® Z-110 catalyst was able to catalyze this reaction. No trimerization was observed with any of the other tertiary amines tested, including pentamethyl-diethylenetriamine (PMDETA). PMDETA is a catalyst used by Savoca. See Example 5 (Savoca mixes PMDETA with boric acid and water). Because the Applicant’s have shown that PMDETA alone does not catalyze the trimer reaction, it is submitted that any trimerization observed by Savoca was due to something other than PMDETA such as the anion of the adduct. Because neither Soukup nor Savoca disclose or suggest, alone or in combination, a tertiary amine catalyst that is capable of catalyzing a trimer reaction, the Examiner has not established *prima facie* obviousness.

Furthermore, the Examiner has not established *prima facie* inherency. To be inherent the thing necessarily must occur. As is discussed in the paragraphs above Soukup’s tertiary amines merely catalyze a urethane-forming reaction, as do Savoca’s. Furthermore, the

Applicants have shown (in figure 1 and the accompanying text), that one of the tertiary amines used by both Savoca and the Applicant does not necessarily catalyze a trimer reaction, much less do so at the claimed temperatures. This this feature is not inherent and for this additional reason *prima facie* obviousness has not been established.

Claims 1-17 also stand rejected under 35 U.S.C. § 103(a) as being obvious over Soukup in view of an alleged admission on page 1, lines 14-16 of the specification. These lines, however, do not state that the specifically claimed amine is capable of catalyzing the trimerization reaction at the claimed temperature(s). Therefore, there is no reason to substitute an amine catalyst taught by Soukup, because, as is explained above, Soukup does not teach or suggest that any of his listed tertiary amine catalysts are capable of the same thing. For at least this reason, claims 1-17 are not obvious.

Claims 21-23 stand rejected under 35 U.S.C. § 103 (a) as being obvious over either Soukup in view of Savoca or Soukup in view of Applicant's alleged admission. Because claims 21-23 are dependent claims, and because the claims from which they depend are not obvious, claims 21-23 too, are not obvious.

In the Examiner's response to arguments filed on 11/13/07, the Examiner states that "figure 1 in no way shows that only Z-110 promotes trimerization." The Examiner is correct in that FIG. 1 shows that Z-110 *and* the potassium salts KO and KA catalyze the trimerization of isocyanate. Notably, none of the *tertiary amine catalysts* tested had the same behavior as Z-110. The Examiner also states in his response "the figure (FIG. 1) does not show any criticality for the combination of components a) and b)." Again true. But the Applicants observed a synergistic effect when JEFFCAT®Z-110 was used in combination with other trimer catalysts. Specification, page 7, lines 2-5. For instance, referring to FIG.s 2 and 3, the catalyst B (potassium octoate and JEFFCAT®Z-110) significantly increased the trimer content of a foam and increased the overall conversion of isocyanate groups in the foam. Specification, page 12, lines 1-5. The same was not observed with catalyst A (potassium octoate and JEFFCAT®PMDETA). Thus, even though FIG. 1 does not show the criticality of the combination of components a) and b), other figures do. Other remarks made by the Examiner in his response to prior argument are believed to have been addressed by the discussion above.

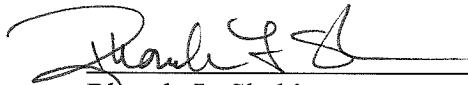
## CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is now in condition for allowance, and respectfully request issuance of a Notice of Allowance directed towards the pending claims.

The Commissioner for Patents is hereby authorized to deduct any extension of time fees and/or any extra claim fees that are due in connection with the filing of this document from Huntsman Corporation Deposit Account No. 08-3442.

Respectfully Submitted,

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